

HYPERBRANCHED POLYMER DOMAIN NETWORKS

AND METHODS OF MAKING SAME

ABSTRACT OF THE DISCLOSURE

A curable polymer composition capable of achieving rapid curing, reduced viscosity,
5 high solids content, and a very low or zero volatile organic compound content includes a
hyperbranched polymer having functional groups of a first type and a polymer having
functional groups of a second type, wherein the functional groups of the second type are
reactive with the functional groups of the first type under at least certain conditions. The
composition can be cured to form a cross-linked nano-domained network comprising covalently
10 bonded nanoscopic, hyperbranched domains which may be of the same or different chemical
composition than the rest of the network. The cured compositions may exhibit high thermal
stability, mechanical strength and toughness.

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